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Claims

1. Femural component of an artificial hip joint (for an uncemented or cemented revision operation or primary operation) characterized by the follo~~wing elements~~: NPA

the stem is made of one or more pieces, NPA

the stem comprises a dorsolateral cylindrical component that is aligned axially relative to the intermedullary canal and that may be solid or hollow and can be connected rigidly or removably with a single- or multiple-piece anatomical metaphysial segment that is constructed in a conical, medially eccentric shape, NPA

the proximal metaphysial component that holds the cone for the central or eccentric head mount by means of a shaft-cone transition (shoulder).

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2. The femural component of claim (1), configured such that the cylindrical component, as a continuous design axis on the dorsal side eccentrically accommodates the metaphysial components, which are kidney-shaped when seen in cross section, by means of a complete or unclosed hole, and said metaphysial components are comprised of one or more pieces.

3. The femural component of claims (1) and (2), designed such that the femur stem axis coincides with the femur canal axis, and in the frontal plane the collum-centrum axis forms an angle with the diaphysial axis (CCD angle) of between 125° and 145°, as a rule 135°, and in the axial top view has an angle between the diaphysis and the screw neck axis - the "antetorsion angle" - of between 5° and 15°, as a rule 7°.

4. The femural component of claims (1) to (3), designed such that the ventral surface is curved in a convex manner in the axial aspect and is curved an a concave manner in the ventral aspect, such that the center of curvature is in the ventral position and the radius of curvature decreases continuously in the proximal direction (parabola).

5. The femural component of claims (1) to (4), designed such that the medial outer surface is curved in an convex manner in the axial aspect and, along the medial contour, is curved in a concave shape, in such a way that the center point of outer wall curvature is medial, and its radius decreases continuously in the proximal direction (parabola).

6. The femural component of claims (1) to (5), designed such that the dorsal outer surface of the stem has a convex-concave-convex curvature moving around the axis proximally from lateral to medial in the form of a breaking wave or a rounded "3" having asymmetric halves and a round transition.

7. The femural component of claims (1) to (6), constructed such that the lateral outer surface is designed to protrude in a substantially linear, cylindrical or conical shape in the proximal direction, or to protrude in a cylindrical shape in the lateral direction.

8. The femural component of claims (1) to (7), embodied such that the ventral surface and/or medial surface and/or dorsal surface and/or lateral surface is/are structured by means of coaxially aligned longitudinal ribs.

9. The femural component of claims (1) to (8), designed such that the stem makes a transition via a shoulder component (head-neck-stem-transition) to the cone, which, as a modular system, can accommodate various heads in centered or eccentric positions, and which may have a central hole for accommodating a tension anchor.

10. The femural component of claims (1) to (9), constructed such that the cone has a hole drilled through it axially, coaxially, or at an angle for accommodating a tension anchor or tension screw, or the shoulder has additional holes for accommodating additional tension anchors

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having wires or cables and/or thrust/tension rods and/or tension screws.

11. The femural component of claims (1) to (10), constructed such that the cone is oriented between 2° and 9°, as a rule 5°, in such a way that the CCD angle does not change and the offset also remains unchanged, however the axis of the cone projects into the laterodorsal circumference of the compact femur 2-4 cm below the tuberculum innominatum.

12. The shoulder component of claim (10), constructed such that in a plurality of levels holes are provided for accommodating tension anchors to the dorsal, lateral, and ventral femur wall.

13. The metaphysial component of claims (10) to (12), constructed such that in a plurality of levels holes are provided for accommodating tension anchors to the dorsal, lateral and ventral femur wall.

14. The femural component of claims (1) to (13), constructed such that the implant is made of titanium, tantalum, CoCrMo, or an alloy of titanium, tantalum, or of stainless steel.

15. The femural component of claims (1) to (14), constructed such that the surface of the proximal half has a roughness of 50-250 μm, preferably 80-150 μm.

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Summary

The invention relates to a shaft prosthesis having a modular system that is anchored in the proximal cement cavity by means of a conically axial tension anchor. The stem segments and base segments may be of various lengths.

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Modular Revision Prosthesis

Fig. 01	NPS modular system projected into a femur
Fig. 01/100	Stem segments
Fig. 01/100.1	Metaphysial segment
Fig. 01/100.2	Diaphysial center segment
Fig. 01/100.3	Base segment
Fig. 01/101	Offset = intermedullary canal axis center of rotation
Fig. 01/102	Tip of the base segment
Fig. 01/103	Axial cylinder of the base segment
Fig. 01/105	Contact surface of segments (base segment and stem segment)
Fig. 01/106	Hole in stem segment
Fig. 01/110	Access hole
Fig. 01/130	Intermedullary canal axis
Fig. 01/200	Shoulder of prosthesis
Fig. 01/300	Cone of prosthesis
Fig. 01/50	Thrust anchor
Fig. 01/51	Screw head
Fig. 01/54	Washer
Fig. 01/55	Cone nut
Fig. 01/60	Tension anchor screw
Fig. 01/70	Tension anchor
Fig. 01/71	Hole in the shoulder of the prosthesis for tension anchor
Fig. 02	
Fig. 02/104	Transition segment between the lateral portion and the medial portion of the prosthesis cross section in the metaphysial segment
Fig. 02/108	Convex-concave-convex curvature of the dorsal outer surface
Fig. 02/109	Metaphysial segment, lateral portion
Fig. 02/110	Metaphysial segment, medial portion
Fig. 02/111	Convex curvature of ventral outer surface
Fig. 02/112	Hole along the channel axis in the lateral segment
Fig. 02/113	Thrust anchor hole
Fig. 03	NPS modular system projected into a femur
Fig. 03/100	Stem segments

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Fig. 03/100.1	Metaphysial segment
Fig. 03/100.2	Diaphysial center section
Fig. 03/100.3	Base segment
Fig. 03/101	Offset = intermedullary canal axis center of rotation
Fig. 03/102	Tip of the base segment
Fig. 03/103	Axial cylinder of the base segment
Fig. 03/105	Contact surface of segments (base segment and stem segment)
Fig. 03/106	Hole in stem segment
Fig. 03/110	Access hole
Fig. 03/130	Intermedullary canal axis
Fig. 03/200	Shoulder of prosthesis
Fig. 03/300	Cone of prosthesis
Fig. 03/50	Thrust anchor
Fig. 03/51	Screw head
Fig. 03/54	Washer
Fig. 03/55	Cone nut
Fig. 03/60	Tension anchor screw
Fig. 03/70	Tension anchor
Fig. 03/71	Hole in the should of the prosthesis for the tension anchor

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